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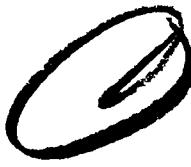
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ERDA-80

METEOROLOGICAL DATA REPORT

APPROVE NO. 3 129

BY

MARJORIE McLARDLE HOIBAHL

**WHITE SANDS MISSILE RANGE
NEW MEXICO**

1181

\$4.00

⑥ METEOROLOGICAL DATA REPORT

AEROBEE NE 3.129

⑦ By

Marjorie McLardie Hoidal

⑧ AERDA-80

⑨ October 1963

⑩ DA-Task 1-G-6-50212-A-127-02

⑪ F

METEOROLOGICAL SUPPORT DIVISION
ENVIRONMENTAL SCIENCES DEPARTMENT
U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

ABSTRACT


Meteorological data gathered for the launching of Aerobee NE 3.129 are presented for the U. S. Naval Research Laboratory and for ballistic studies. The data appear, along with calculated ballistic data, in Appendixes A, B, C and D.



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INTRODUCTION

Aerobee NE 3.129 was launched by Naval Ordnance Missile Test Facility personnel, White Sands Missile Range, New Mexico, at 0730 hours MST, 28 June 1963.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Division, U. S. Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico.

DISCUSSION

Wind data for the first 2,000 feet above the surface were obtained from a Double-Theodolite Wind Velocity Computer System [1]. Balloons released at the launch site were observed and tracked from a 2,000-foot baseline. Continuous angular data were transmitted from two electrically instrumented theodolites to a computer where the data were reduced to obtain a velocity-vs-height relationship. The computer output drives two recorders which trace north-south and east-west components on a specially designed wind velocity computer ballistic chart. It is possible to read directly from the chart both the mean wind component values and the mean ballistic wind components in the various ballistic layers.

Temperature, pressure and humidity data, along with upper wind data from 2,000 to approximately 75,000 feet above the surface, were obtained from standard rawinsonde operations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Data appearing in Appendix D are based on the E. L. Walter [2] theory. The "Predicted Impact" includes, where applicable, an adjustment of impact based on the experience of the impact predictor and the forecast of firing time wind conditions.

[1]. "Double-Theodolite Wind Velocity Computer," UNCLASSIFIED, U. S. Army Signal Research and Development Laboratory, Fort Monmouth, New Jersey, July 1959.

[2]. Walter, E. L., "Six-Variable Ballistic Model for a Rocket," Missile Meteorology Division, U. S. Army Signal Missile Support Agency, White Sands Missile Range, New Mexico, June 1962.

APPENDIX A

CALCULATED ROCKET PERFORMANCE VALUES

AND

TABLE OF BALLISTIC FACTORS

AEROBEE NE 3.129

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APPENDIX A

TABLE A-I

CALCULATED ROCKET PERFORMANCE VALUES

AEROBEE NE 3.129

PAYOUT 241.85 POUNDS

UNIT WIND EFFECT	5.055 Miles/Mile Per Hour
TOWER TILT EFFECT	20.09 Miles/Degree
BURNOUT:	
Velocity	6,050 Feet/Second
Altitude	131,350 Feet MSL
Time	52.8 Seconds
PEAK:	
Altitude	134 Miles MSL
Time	241 Seconds
TOTAL TIME OF FLIGHT	
CORIOLIS EFFECT (West)	
	502 Seconds
	6.63 Miles

APPENDIX A

TABLE A-11

TABLE OF BALLISTIC FACTORS

AEROBEE NE 3.129

HEIGHT INTERVAL FEET	BALLISTIC FACTOR	HEIGHT INTERVAL FEET	BALLISTIC FACTOR
143 - 200	.138	5,000 - 10,000	.063
200 - 300	.158	10,000 - 15,000	.032
300 - 400	.090	15,000 - 20,000	.022
400 - 600	.102	20,000 - 25,000	.019
600 - 800	.064	25,000 - 30,000	.013
800 - 1,000	.046	30,000 - 35,000	.011
1,000 - 1,200	.032	35,000 - 40,000	.010
1,200 - 1,400	.024	40,000 - 45,000	.006
1,400 - 1,600	.020	45,000 - 50,000	.005
1,600 - 1,800	.015	50,000 - 60,000	.012
1,800 - 2,000	.015	60,000 - 70,000	.006
2,000 - 3,000	.040	70,000 - 80,000	.006
3,000 - 4,000	.024	80,000 - 90,000	.005
4,000 - 5,000	.023	90,000 - 100,000	.005

APPENDIX B

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION
AND
PILOT-BALLOON-MEASURED WIND DATA FROM 143 TO 10,000 FEET
AEROBEE NE 3,129

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B-III. Pilot-Balloon-Measured Wind Data (2,000 to 10,000 Feet)	12

APPENDIX B

TABLE B-I

ANEMOMETER RECORDINGS OF WIND SPEED AND DIRECTION

AEROBEE NE 3.129

<u>TIME (MINUTES)</u>	<u>WIND SPEED (MPH)</u>	<u>DIRECTION (DEGREES)</u>
T - 15	5.5	117
T - 10	7.0	105
T - 5	6.0	110
T - Time	6.5	100
T + 5	5.5	100
T + 10	5.5	112
T + 15	5.5	112

Note: Wind speeds and directions are 5-minute averages centered at indicated times.

TABLE B-II

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NE 3.129

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NR	1		2		3		4	
RELEASE TIME (NST)	0330		0400		0435		0500	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143 - 200	9.5S	1.5E	7.0S	11.5E	0	4.0E	3.0S	7.0E
200 - 300	10.0	2.5	7.5	9.5	1.5S	12.5	4.5	8.0
300 - 400	9.5	4.5	11.0	14.0	5.0	14.5	9.0	6.5
400 - 600	9.0	4.0	10.5	10.0	7.0	13.0	9.5	7.5
600 - 800	10.5	4.0	12.5	11.0	9.0	12.5	10.0	8.0
800 - 1,000	11.5	3.5	14.0	11.0	13.5	13.0	11.0	8.0
1,000 - 1,200	15.0	5.0	18.0	9.0	16.0	12.5	15.0	11.0
1,200 - 1,400	20.0	8.5	20.0	7.5	17.5	9.5	19.5	10.0
1,400 - 1,600	22.0	7.5	18.0	7.0	15.0	7.0	17.5	9.0
1,600 - 1,800	25.0	8.0	20.0	7.0	18.0	10.5	18.0	8.0
1,800 - 2,000	20.5	6.5	20.0	10.0	16.5	7.0	17.0	7.0

APPENDIX P

TABLE B-II (Cont)

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NE 3,129

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

DOUBLE-THEODOLITE METHOD

RELEASE NR	5		6		7		8	
RELEASE TIME (MST)	0525		0600		0625		0645	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
145 - 200	4.0S	1.5E	2.5S	3.5E	3.5S	6.0E	2.0S	6.5E
200 - 300	3.5	1.5W	2.0	1.0	4.0	3.5	3.5	9.0
300 - 400	4.0	3.0	2.0	1.0W	4.5	3.0	4.0	7.5
400 - 600	4.5	3.5	3.0	3.0	3.5	4.5	4.0	9.0
600 - 800	3.0	2.0	5.5	0	6.5	8.0	6.5	9.0
800 - 1,000	4.5	1.0E	7.5	4.5E	10.0	8.0	11.0	3.5
1,000 - 1,200	8.0	7.0	11.0	4.5	10.5	5.0	9.0	2.0
1,200 - 1,400	12.5	8.0	12.0	3.0	10.5	2.0	9.5	1.5
1,400 - 1,600	19.0	8.0	14.0	1.0	11.0	1.0W	10.0	2.0W
1,600 - 1,800	17.0	5.0	16.5	2.5	12.0	0	12.0	1.5
1,800 - 2,000	16.5	5.0	17.0	2.5	12.0	0	10.0	0.5

TABLE B-II (Cont)

RELEASE NR	9		10		11		12		13	
RELEASE TIME (MST)	0700		0710		0718		0723		0732	
LAYERS IN FEET	N-S	E-W								
143 - 200	3.0S	8.0E	2.5S	2.0E	3.5S	5.0E	4.0S	5.5E	5.5S	2.5E
200 - 300	4.0	5.0	4.5	5.0	3.5	3.5	3.5	5.0	4.0	5.0
300 - 400	5.0	4.5	5.0	5.0	4.0	5.0	4.0	4.0	4.0	7.0
400 - 600	7.0	8.0	5.0	8.0	6.0	8.0	4.0	5.5	6.0	8.0
600 - 800	9.0	6.5	8.0	8.5	8.0	9.0	7.5	8.0	8.5	7.0
800 - 1,000	8.5	3.0	9.5	5.0	8.5	5.0	9.5	6.5	9.5	5.0
1,000 - 1,200	9.0	1.0	9.0	2.0	8.5	1.5	9.5	1.5	7.5	1.0
1,200 - 1,400	7.0	2.0W	7.5	0.5	8.0	1.0	7.5	0	7.0	1.0W
1,400 - 1,600	8.5	1.0	8.0	1.0W	8.0	0.5W	8.5	1.0W	9.0	1.0
1,600 - 1,800	10.0	1.0	10.0	0	10.5	0	9.0	0.5	9.0	0.5E
1,800 - 2,000	10.5	2.0E	8.5	2.0E	8.5	1.0E	10.0	1.0	10.0	1.5

APPENDIX E

TABLE B-III

PILOT-BALLOON-MEASURED WIND DATA

AEROBEE NE 3.129

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN MILES PER HOUR

SINGLE-THEODOLITE METHOD

RELEASE NR	1		2	
RELEASE TIME (NST)	0535		0635	
LAYERS IN FEET	N-S	E-W	N-S	E-W
2,000 - 2,310	10.0S	5.0E	8.0S	5.0E
2,310 - 3,450	10.0	4.0	6.0	1.0
3,450 - 4,560	13.0	6.0	8.0	6.5
4,560 - 5,670	9.0	5.0	6.0	3.0
5,670 - 6,750	8.0	4.0	7.5	7.0
6,750 - 7,830	0	5.0	5.0	7.0
7,830 - 8,910	0	5.0	5.0	9.0
8,910 - 10,000	2.0S	8.0	0	7.0

APPENDIX C

TABLES OF UPPER AIR DATA

AEROBEE NE 3.129

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APPENDIX C

TABLE C-I

UPPER AIR DATA

AEROBEE NE 3.129

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RAWINSONDE METHOD

RELEASE NR	1	
RELEASE TIME (MST)	0600	
LAYERS IN FEET	N-S	E-W
2,000 - 3,000	11.5S	2.5E
3,000 - 4,000	10.0	4.0
4,000 - 5,000	11.0	6.5
5,000 - 10,000	2.5N	9.5

APPENDIX C

TABLE C-11

UPPER AIR DATA

AEROBEE NE 3.129

MEAN WIND COMPONENTS FOR BALLISTIC ZONES IN KNOTS

RELEASE NR	1		2		3	
RELEASE TIME (MST)	0030		0330		0730	
LAYERS IN FEET	N-S	E-W	N-S	E-W	N-S	E-W
2,000 - 5,000	8.5S	7.5E	11.5S	5.5E	8.5S	4.5E
5,000 - 10,000	2.0	7.5	1.5N	8.5	0	10.5
10,000 - 15,000	10.5N	5.5	10.5	5.5	8.0N	11.5
15,000 - 20,000	0	11.0	1.5S	9.5	3.5S	12.5
20,000 - 25,000	3.5S	4.5	4.0	2.5W	4.0N	0.5W
25,000 - 30,000	3.5N	10.5W	5.0N	9.5	11.5	2.5
30,000 - 35,000	16.5	11.5	20.5	10.0	19.0	3.0
35,000 - 40,000	12.0	10.5	14.5	8.5	13.5	6.5
40,000 - 45,000	4.5	13.0	7.5	13.0	6.0	10.0
45,000 - 50,000	3.5	10.5	0	10.0	2.0S	2.0
50,000 - 60,000	2.0S	4.0E	10.5N	3.5E	7.0N	12.0E
60,000 - 70,000	4.0N	22.5	0	26.0	1.5S	19.5
70,000 - 80,000	0	22.0	2.0S	23.0	1.0	23.0
80,000 - 90,000	2.0S	23.0	6.5N	24.0	BALLOON	
90,000 - 100,000	0	23.0	5.5	31.5	BURST	

APPENDIX C

STATION ALTITUDE 3989 FEET MSL
DATE 28 JUN 1963. 0030 HRS MST
ASCENSION NO. 482

TABLE C III
UPPER AIR DATA
WHITE SANDS SITE

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWEPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES (TN)	SPEED KNOTS	
3989	878.3	24.5	8.9	37	1023.1	673	0	1.000277
5000	848.2	26.5	10.0	35	980.8	676	54	1.000270
6000	819.3	24.2	8.2	36	955.2	673	108	1.000259
7000	791.2	21.9	6.4	36	930.0	670	139	1.000249
8000	763.8	19.6	4.5	37	905.4	668	133	1.000239
9000	737.2	18.6	3.4	36	876.8	666	135	1.000230
10000	711.4	16.4	1.9	38	853.0	664	137	1.000222
11000	686.3	13.8	0.4	40	830.5	661	125	1.000214
12000	661.9	11.2	-1.3	42	808.4	658	98	1.000206
13000	638.1	8.6	-3.0	44	786.8	655	79	1.000199
14000	615.0	6.0	-4.8	46	765.6	651	58	1.000191
15000	592.4	3.3	-6.4	49	744.9	648	42	1.000183
16000	570.5	0.5	-8.0	53	724.8	645	32	1.000178
17000	549.2	-2.3	-9.7	57	705.1	641	26	1.000172
18000	528.5	-4.9	-12.4	56	685.3	638	25	1.000165
19000	508.4	-6.8	-18.9	38	664.3	636	31	1.000158
20000	488.9	-8.7	-28.0	20	643.8	633	48	1.000147
21000	470.0	-10.0	-36.0	10	622.3	632	86	1.000140
22000	451.8	-11.4	-37.0	10	601.2	630	110	1.000135
23000	434.1	-14.1	-39.2	10	583.7	627	123	1.000131
24000	417.0	-16.8	-41.3	10	566.6	623	131	1.000127
25000	400.4	-19.5	-43.5	10	550.0	620	133	1.000123
26000	384.2	-21.6	-45.2	10	532.2	618	133	1.000119
27000	368.6	-23.7	-46.8	10	514.8	615	171	1.000115
28000	353.6	-25.8	-48.5	10	497.9	612	267	1.000111
29000	339.0	-28.1	-39.5	33	481.8	610	294	1.000107
30000	324.9	-30.4	-36.0	59	466.1	607	297	1.000105
31000	311.2	-32.1	-42.1	37	449.8	605	293	1.000101
32000	298.1	-33.8			433.8	602	297	1.000097
33000	285.4	-35.0			419.3	600	304	1.000093
34000	273.1	-38.3			405.2	597	313	1.000090
35000	261.3	-40.5			391.3	594	319	1.000087
36000	249.8	-42.6			377.6	591	323	1.000084

APPENDIX C

TABLE C-III (cont'd)

STATION	ALTITUDE	3967 FEET	DATE	26 JUN 1963	TIME	0330 HRS EST	WHITE SANDS SITE	WESTERN COORDINATES	E 488,580 FEET	N 185,045 FEET
ASCENSION	AC. 462									
GEOMETRIC ALTITUDE	PRESSURE MILLIBARS	TEMPERATURE DEGREES	RELATIVE HUMIDITY PERCENT	RELATIVE DENSITY GM/CUBIC METER	SPEC. OF SUGAR	WIND DATA	DIRECTION DEGREES (IN)	SPEED KNOTS	INDEX OF REFRACTION	
FEET		DEGREES C	PERCENT	HECTARE	KILOMETERS		DEGREES (IN)			
37000	238.4	-44.3	36.4	1.000081		329	22			
38000	225.1	-47.0	351.4	1.000078		334	21			
39000	217.9	-49.2	338.9	1.000075		336	19			
40000	208.0	-51.4	326.7	1.000073		333	16			
41000	198.4	-53.6	314.9	1.000070		326	15			
42000	189.2	-55.9	303.5	1.000068		317	16			
43000	180.4	-58.2	292.2	1.000065		309	17			
44000	171.8	-60.5	281.5	1.000063		307	18			
45000	163.0	-62.0	270.0	1.000060		306	16			
46000	155.8	-63.5	258.6	1.000058		298	15			
47000	148.2	-65.0	248.1	1.000055		292	14			
48000	141.0	-66.2	237.7	1.000053		288	12			
49000	134.1	-68.0	227.7	1.000051		283	12			
50000	127.5	-69.3	218.1	1.000049		280	12			
51000	121.1	-71.1	208.6	1.000046		279	10			
52000	115.1	-72.6	199.9	1.000045		283	7			
53000	109.2	-74.2	191.3	1.000043		296	4			
54000	104.5	-76.2	181.6	1.000040		12	3			
55000	99.4	-78.3	171.4	1.000038		70	2			
56000	95.5	-79.9	161.1	1.000036		71	1			
57000	92.9	-80.6	151.3	1.000034		39	2			
58000	90.5	-80.2	142.3	1.000032		22	4			
59000	88.4	-80.2	134.6	1.000030		31	7			
60000	86.5	-83.5	127.1	1.000028		44				
61000	82.8	-82.7	120.6	1.000027		56	15			
62000	69.4	-82.0	114.1	1.000025		65	16			
63000	66.0	-81.3	108.6	1.000024		70	16			
64000	62.9	-80.6	103.1	1.000023		74	16			
65000	59.9	-80.9	97.7	1.000022		76	15			
66000	57.1	-80.2	93.6	1.000021		77	18			
67000	54.4	-80.5	88.3	1.000020		78	21			
68000	51.9	-80.8	83.9	1.000019		80	24			
69000	49.4	-80.9	79.7	1.000018		81	25			

APPENDIX C

TABLE C-III

STATION ALTITUDE 3988 FEET MSL		UPPER AIR DATA		WSTN SITE COORDINATES		INDEX	
DATE 28 JUN 1963, 0030 HRS MST		WHITE SANDS SITE		E 488.580 FEET		OF	
ASCENSION NO. 482				N 185.045 FEET			
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWEPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(CTN)	WIND DATA SPEED KNOTS
70000	47.1	-56.3	75.7	573	89	26	1.000017
71000	44.9	-55.7	72.0	574	90	25	1.000016
72000	42.9	-55.0	68.4	575	87	24	1.000015
73000	40.9	-54.3	65.1	576	82	21	1.000014
74000	39.0	-53.6	61.9	577	85	21	1.000014
75000	37.2	-52.9	58.8	578	92	22	1.000013
76000	35.5	-52.7	56.1	578	98	22	1.000012
77000	33.9	-52.5	53.5	578	97	21	1.000012
78000	32.3	-52.4	51.0	579	89	18	1.000011
79000	30.8	-52.3	48.6	579	88	20	1.000011
80000	29.4	-52.2	46.4	579	91	22	1.000010
81000	28.1	-52.0	44.2	579	94	24	1.000010
82000	26.8	-51.9	42.2	579	96	26	1.000009
83000	25.6	-51.4	40.2	580	95	26	1.000009
84000	24.4	-50.2	38.2	581	95	26	1.000008
85000	23.3	-49.1	36.3	583	98	27	1.000008
86000	22.3	-48.0	34.5	584	102	28	1.000008
87000	21.3	-46.8	32.8	586	105	26	1.000007
88000	20.3	-45.7	31.1	587	108	24	1.000007
89000	19.4	-44.6	29.6	589	105	22	1.000007
90000	18.6	-43.5	28.2	590	100	21	1.000006
91000	17.8	-42.7	26.8	591	95	22	1.000006
92000	17.0	-42.7	25.7	591	90	24	1.000006
93000	16.2	-42.7	24.5	591	90	25	1.000005
94000	15.5	-42.6	23.5	591	91	25	1.000005
95000	14.8	-42.6	22.4	591	92	25	1.000005
96000	14.2	-42.6	21.5	591	91	25	1.000005
97000	13.6	-42.6	20.5	591	89	24	1.000005
98000	13.0	-42.6	19.6	591	87	25	1.000004
99000	12.4	-42.6	18.8	591	87	27	1.000004
100000	11.9	-42.6	17.9	591	90	27	1.000004
101000	11.4	-42.5	17.2	591	89	26	1.000004
102000	10.9	-42.5	16.4	591	86	25	1.000004

APPENDIX C

TABLE C (Continued)

OPEN AIR DATA

STATION 41 LATITUDE 37° 55' WEST PSL
 DATE 26 NOV 1963, 2:30 HRS NST
 ASCENSION NO. 482

GEOMETRIC ALTITUDE FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF WIND KNOTS	WIND DATA DIRECTION DEGREES (IN) KNOTS	INDEX OF REFRACTION
103000	10.6	-42.5	15.7	5.91	82	24	1.000003
104000	9.9	-42.4	15.0	5.92	76	24	1.000003
105000	9.5	-41.5	14.3	5.93	72	26	1.000003
106000	9.1	-40.7	13.6	5.94	70	30	1.000003
107000	8.7	-39.9	13.0	5.95	74	34	1.000003
108000	8.3	-38.9	12.4	5.96	75	38	1.000003
109000	8.0	-37.0	11.8	5.97	76	43	1.000003
110000	7.6	-37.0	11.2	5.98	80	46	1.000003
111000	7.3	-36.1	10.7	5.99	85	49	1.000002
112000	7.0	-35.2	10.2	6.01			1.000002
113000	6.7	-34.4			9.8	602	1.000002
114000	6.4	-33.5			9.3	603	1.000002
115000	6.1	-32.6			8.9	604	1.000002

WSTM SITE COORDINATES
 E 488,580 FEET
 N 1,5,045 FEET

APPENDIX C

TABLE C-14a
UPPER AIR DATA

STATION ALTITUDE 3989 FEET MSL
DATE 28 JUN 1963, 0330 HRS HST
ASCENSION NO. 483

WSTH SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

WHITE SANDS SITE

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREESES	DEWPOINT DEGREESES	RELATIVE HUMIDITY PERCENT	GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(KN)	SPEED KNOTS	INDEX OF REFRACTION
3989	878.6	21.4	9.7	47	1033.9	670	0	0	1.000283
5000	848.3	24.3	11.1	43	987.7	674	69	7	1.000277
5200	823.7	23.3	10.0	43	974.4	672	102	10	1.000270
6000	819.2	22.2	8.8	42	961.3	671	136	14	1.000263
6500	805.0	21.2	7.6	41	948.3	670	154	15	1.000257
7000	790.9	20.1	6.5	41	935.4	668	151	14	1.000251
7500	777.1	19.0	5.3	40	922.6	667	146	13	1.000245
8000	763.4	18.4	3.8	38	908.8	666	139	12	1.000238
8500	749.9	18.3	1.5	32	893.5	666	131	12	1.000229
9000	736.7	18.0	-0.7	28	879.1	665	124	11	1.000222
9500	723.7	16.7	-1.1	29	867.2	664	119	12	1.000219
10000	710.9	15.5	-1.7	31	855.6	663	115	12	1.000215
10500	698.2	14.3	-2.2	32	844.0	661	112	12	1.000212
11000	685.7	13.0	-2.8	33	832.6	660	108	12	1.000209
11500	673.4	11.7	-3.4	35	821.3	658	103	10	1.000205
12000	661.2	10.5	-4.0	36	810.1	657	96	9	1.000202
12500	649.2	9.2	-4.7	37	799.0	655	79	7	1.000199
13000	637.3	7.8	-4.9	40	788.3	654	56	6	1.000196
13500	625.7	6.5	-5.2	43	777.6	652	35	6	1.000193
14000	614.2	5.1	-5.6	46	767.1	650	14	6	1.000191
14500	602.8	3.7	-6.0	49	756.7	649	11	8	1.000188
15000	591.6	2.3	-6.5	52	746.4	647	11	9	1.000185
15500	580.5	0.9	-7.1	55	736.3	645	16	10	1.000182
16000	569.6	-0.5	-7.7	58	726.2	644	21	12	1.000179
16500	558.9	-1.9	-8.4	61	716.3	642	26	13	1.000176
17000	548.3	-3.3	-9.1	64	706.4	640	30	14	1.000173
17500	537.8	-4.7	-9.9	67	696.7	639	34	15	1.000170
18000	527.5	-6.2	-10.7	70	687.1	637	38	15	1.000167
18500	517.3	-7.6	-11.6	74	677.5	635	42	13	1.000165
19000	507.3	-7.4	-21.5	31	664.5	635	53	12	1.000154
19500	497.5	-7.3	-30.1	14	651.8	635	63	10	1.000148
20000	487.9	-7.5	-31.1	13	639.7	635	82	10	1.000145
20500	478.4	-8.4	-31.5	14	629.4	634	98	11	1.000143

APPENDIX C

TABLE C-IV (Cont.)

STATION ALTITUDE 3989 FEET MSL
 DATE 28 JUN 1963, 0330 HRS MST
 ASCENSION NO. 403

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEWPOINT CENTIGRADE	RELATIVE DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA			INDEX OF REFRACTION
						DIRECTION DEGREES (TIN)	SPEED KNOTS	INDEX	
21000	469.1	-9.6	-31.7	15	619.9	632	105	12	1.000140
21500	459.9	-10.8	-32.0	16	610.5	631	109	12	1.000138
22000	450.9	-11.9	-32.4	17	601.3	629	111	13	1.000136
22500	442.0	-13.1	-32.8	18	592.1	628	112	12	1.000134
23000	433.3	-14.3	-33.2	19	583.1	627	113	11	1.000132
23500	424.7	-15.5	-33.7	20	574.1	625	114	10	1.000130
24000	416.2	-16.7	-34.2	21	565.3	624	116	10	1.000128
24500	407.8	-17.9	-34.8	22	556.6	622	120	9	1.000126
25000	399.6	-19.1	-35.4	23	548.0	621	124	8	1.000124
25500	391.5	-20.4	-36.0	24	539.5	619	128	7	1.000122
26000	383.5	-21.6	-36.6	25	531.1	618	133	5	1.000120
26500	375.7	-22.8	-37.3	26	522.8	616	144	3	1.000118
27000	368.0	-24.1	-38.0	27	514.6	615	170	1	1.000116
27500	360.4	-25.3	-38.7	28	506.5	613	240	2	1.000114
28000	352.8	-26.5	-38.1	33	498.3	612	287	2	1.000112
28500	345.5	-27.7	-37.2	40	490.2	610	285	3	1.000111
29000	338.2	-28.9	-36.6	48	482.3	609	282	4	1.000109
29500	331.1	-30.0	-36.3	55	474.4	607	277	4	1.000107
30000	324.1	-31.2	-36.2	63	466.6	606	279	5	1.000106
30500	317.2	-32.2	-38.9	52	458.6	604	289	6	1.000104
31000	310.5	-33.1	-43.8	34	450.5	603	299	7	1.000102
31500	303.6	-34.0	-51.7	15	442.5	602	308	9	1.000099
32000	297.3	-34.5			434.1	601	315	12	1.000097
32500	290.9	-35.0			425.6	601	320	15	1.000095
33000	284.6	-36.0			418.2	600	323	17	1.000093
33500	278.4	-37.1			411.1	598	326	19	1.000092
34000	272.4	-38.3			404.0	597	328	20	1.000090
34500	266.4	-39.4			397.0	595	331	22	1.000088
35000	260.6	-40.5			390.2	594	332	23	1.000087
35500	254.4	-41.6			383.4	592	334	23	1.000085
36000	249.1	-42.7			376.7	591	336	24	1.000084
36500	243.6	-43.9			370.2	590	337	25	1.000082
37000	238.1	-45.0			363.7	588	338	26	1.000081

APPENDIX C

TABLE C-IV (Cont.)

STATION ALTITUDE 3989 FEET MSL
 DATE 28 JUN 1963, 0330 HRS MST
 ASCENSION NO. 483

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPOINT DEGREES		RELATIVE HUMIDITY PERCENT	DENSITY G/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		DEGREES	CENTIGRADE				DIRECTION DEGREES (TIN)	SPEED KNOTS	
37500	232.8	-46.2		357.3	587	339	26		1.0000080
38000	227.5	-47.3		351.0	585	341	25		1.0000078
38500	222.3	-48.5		344.8	584	343	25		1.0000077
39000	217.2	-49.6		338.6	582	343	23		1.0000075
39500	212.3	-50.8		332.6	581	343	21		1.0000074
40000	207.4	-52.0		326.6	579	341	20		1.0000073
40500	202.5	-53.2		320.8	578	339	18		1.0000071
41000	197.8	-54.4		315.0	576	337	17		1.0000070
41500	193.1	-55.5		309.2	574	334	17		1.0000069
42000	188.6	-56.7		303.6	573	330	16		1.0000068
42500	184.1	-57.9		298.0	571	323	16		1.0000066
43000	179.7	-59.1		292.5	570	318	16		1.0000065
43500	175.4	-60.3		287.1	568	313	15		1.0000064
44000	171.2	-61.5		281.7	567	309	15		1.0000063
44500	167.0	-62.3		276.0	565	302	16		1.0000061
45000	163.0	-63.0		270.2	564	296	16		1.0000060
45500	159.0	-63.8		264.6	563	293	17		1.0000059
46000	155.1	-64.5		259.0	562	293	16		1.0000058
46500	151.3	-65.2		253.5	562	293	16		1.0000056
47000	147.6	-65.9		248.1	561	293	16		1.0000055
47500	143.9	-66.7		242.8	560	293	16		1.0000054
48000	140.4	-67.4		237.7	559	289	15		1.0000053
48500	136.9	-68.1		232.6	558	283	14		1.0000052
49000	133.4	-68.9		227.6	557	281	13		1.0000051
49500	130.1	-69.6		222.7	556	280	13		1.0000050
50000	126.8	-70.3		217.9	555	279	13		1.0000049
50500	123.6	-71.1		213.2	553	280	12		1.0000047
51000	120.5	-71.8		208.5	552	282	11		1.0000046
51500	117.4	-72.6		204.0	551	283	9		1.0000045
52000	114.4	-73.3		199.5	550	283	8		1.0000044
52500	111.5	-74.1		195.2	549	283	8		1.0000043
53000	108.6	-74.9		190.9	548	283	7		1.0000042
53500	105.8	-74.6		185.7	549		6		1.0000041

APPENDIX C

TABLE C-IV (Cont)

STATION, ALTITUDE 3980 FEET MSL		UPPER AIR DATA		WSTN SITE COORDINATES		INDEX	
DATE 26 JUN 1963, 0330 HRS MST		WHITE SANDS SITE		E 488,580 FEET		OF	
ASCENSION NO. 483				N 185,045 FEET			
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	GMI/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TN)	SPEED KNOTS
54000	103.1	-73.0	179.4	551	304	6	1.000040
54500	100.5	-71.3	173.5	553	315	6	1.000039
55000	97.9	-69.7	167.8	555	324	6	1.000037
55500	95.5	-68.1	162.3	558	336	6	1.000036
56000	93.1	-66.6	157.1	560	349	8	1.000035
56500	90.8	-65.6	152.5	561	33	10	1.000034
57000	88.6	-65.3	148.5	561	18	12	1.000033
57500	86.4	-65.0	144.7	562	27	12	1.000032
58000	84.3	-64.7	140.9	562	36	12	1.000031
58500	82.2	-64.4	137.3	563	43	12	1.000031
59000	80.2	-64.1	133.7	563	55	13	1.000030
59500	78.3	-63.8	130.3	563	63	13	1.000029
60000	76.4	-63.5	126.9	564	70	13	1.000028
60500	74.5	-63.2	123.6	564	77	13	1.000028
61000	72.7	-62.9	120.5	565	82	15	1.000027
61500	70.9	-62.6	117.4	565	85	16	1.000026
62000	69.2	-62.3	114.4	565	86	18	1.000025
62500	67.5	-62.0	111.4	566	86	19	1.000025
63000	65.9	-61.8	108.6	566	89	19	1.000024
63500	64.3	-61.5	105.8	567	87	20	1.000024
64000	62.7	-61.2	103.1	567	84	20	1.000023
64500	61.2	-60.9	100.5	567	82	21	1.000022
65000	59.8	-60.6	98.0	568	80	22	1.000022
65500	58.3	-60.3	95.5	568	79	23	1.000021
66000	56.9	-60.0	93.1	569	86	23	1.000021
66500	55.6	-59.7	90.7	569	82	23	1.000020
67000	54.2	-59.4	88.4	569	85	24	1.000020
67500	52.9	-59.1	86.2	570	86	25	1.000019
68000	51.7	-58.8	84.0	570	86	24	1.000019
68500	50.5	-58.5	81.9	570	86	22	1.000018
69000	49.3	-58.2	79.8	571	92	23	1.000017
69500	48.1	-57.9	77.8	571	96	24	1.000017
70000	46.9	-57.6	75.9	572	98	23	1.000017

APPENDIX C

TABLE C-4 (Cont)

STATION ALTITUDE 3989 FEET MSL		UPPER AIR DATA		WHITE SANDS SITE		WSTM SITE COORDINATES	
DATE 28 JUN 1963, 0330 HRS MST						E 488,580 FEET	
ASCENSION NO. 483						N 185,045 FEET	
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEWPOINT DEGREES	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA INDEX OF REFRACTION
70500	45.8	-57.4			74.0	572	100 1.000016
71000	44.7	-57.1			72.2	572	104 1.000016
71500	43.7	-56.8			70.4	573	108 1.000016
72000	42.7	-56.5			68.6	573	103 1.000015
72500	41.7	-56.2			66.9	574	97 1.000015
73000	40.7	-55.8			65.2	574	92 1.000014
73500	39.7	-55.1			63.4	575	88 1.000014
74000	38.8	-54.4			61.7	576	85 1.000014
74500	37.9	-53.7			60.1	577	81 1.000013
75000	37.0	-53.0			58.5	578	80 1.000013
75500	36.1	-52.3			57.0	579	84 1.000013
76000	35.3	-51.6			55.5	580	87 1.000012
76500	34.5	-50.9			54.1	580	88 1.000012
77000	33.7	-50.4			52.7	581	90 1.000012
77500	32.9	-50.3			51.5	581	93 1.000011
78000	32.2	-50.2			50.3	581	97 1.000011
78500	31.4	-50.0			49.1	582	99 1.000011
79000	30.7	-49.9			47.9	582	99 1.000011
79500	30.0	-49.7			46.8	582	101 1.000010
80000	29.3	-49.6			45.7	582	104 1.000010
80500	28.7	-49.4			44.6	582	107 1.000010
81000	28.0	-49.3			43.6	583	109 1.000010
81500	27.4	-49.1			42.6	583	110 1.000009
82000	26.7	-49.0			41.6	583	108 1.000009
82500	26.1	-48.8			40.6	583	105 1.000009
83000	25.5	-48.7			39.6	583	101 1.000009
83500	25.0	-48.5			38.7	584	96 1.000009
84000	24.4	-48.4			37.8	584	91 1.000008
84500	23.8	-48.3			36.9	584	89 1.000008
85000	23.3	-48.1			36.1	584	86 1.000008
85500	22.8	-48.0			35.2	584	84 1.000008
86000	22.3	-47.8			34.4	584	81 1.000008
86500	21.8	-47.7			33.6	585	78 1.000007

APPENDIX C

TABLE C-IV (Cont.)

UPPER AIR DATA

STATION ALTITUDE: 3989 FEET MSL*
 DATE 28 JUN 1963, 0330 HRS MST
 ASCENSION NO. 483

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
					DIRECTION DEGREES (T)	SPEED KNOTS	
87000	21.3	-47.5	32.8	585	74	20	1.000007
87500	20.8	-47.4	32.1	585	69	20	1.000007
88000	20.3	-47.2	31.3	585	66	21	1.000007
88500	19.9	-47.1	30.6	585	65	23	1.000007
89000	19.4	-47.0	29.9	586	64	24	1.000007
89500	19.0	-46.8	29.2	586	65	25	1.000006
90000	18.5	-46.7	28.5	586	67	26	1.000006
90500	18.1	-46.5	27.9	586	69	27	1.000006
91000	17.7	-46.4	27.2	586	73	29	1.000006
91500	17.3	-46.2	26.6	587	77	30	1.000006
92000	16.9	-46.1	26.0	587	80	30	1.000006
92500	16.5	-46.0	25.4	587	83	29	1.000006
93000	16.2	-45.8	24.8	587	84	28	1.000006
93500	15.8	-45.7	24.2	587	85	28	1.000005
94000	15.5	-45.5	23.7	587	85	27	1.000005
94500	15.1	-45.4	23.1	588	85	26	1.000005
95000	14.8	-45.2	22.6	588	86	25	1.000005
95500	14.4	-45.1	22.1	588	86	25	1.000005
96000	14.1	-45.0	21.6	588	85	25	1.000005
96500	13.8	-44.8	21.1	588	83	26	1.000005
97000	13.5	-44.6	20.6	589	81	27	1.000005
97500	13.2	-44.5	20.1	589	82	28	1.000004
98000	12.9	-44.3	19.6	589	84	26	1.000004
98500	12.6	-44.2	19.2	589	84	26	1.000004
99000	12.3	-44.0	18.7	589	84	23	1.000004
99500	12.1	-43.8	18.3	590	83	27	1.000004
100000	11.8	-43.7	17.9	590	82	24	1.000004
100500	11.5	-43.5	17.5	590	81	24	1.000004
101000	11.3	-43.4	17.1	590	80	23	1.000004
101500	11.0	-43.2	16.7	590	79	24	1.000004
102000	10.8	-42.8	16.3	591	78	24	1.000004
102500	10.5	-42.4	15.9	591	79	24	1.000004
103000	10.3	-42.0	15.5	592	78	24	1.000003

APPENDIX C

TABLE C-IV. (Cont.)

STATION ALTITUDE 3989FEET MSL
DATE 28 JUN 1963, 0330 HRS MST
ASCENSION NO. 483

UPPER AIR DATA
WHITE SANDS SITE

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	INDEX OF REFRACTION
103500	10.1	-41.6	15.2	593	78	35	1.000003
104000	9.9	-41.2	14.8	593	79	36	1.000003
104500	9.6	-40.7	14.5	594	80	38	1.000003
105000	9.4	-40.3	14.1	594	80	40	1.000003
105500	9.2	-39.9	13.8	595	82	42	1.000003
106000	9.0	-39.5	13.5	595	83	43	1.000003
106500	8.8	-39.1	13.1	596	85	45	1.000003
107000	8.6	-38.7	12.8	596	88	45	1.000003
107500	8.4	-38.3	12.5	597	90	46	1.000003
108000	8.3	-37.9	12.2	597	91	47	1.000003
108500	8.1	-37.5	12.0	598	93	47	1.000003
109000	7.9	-37.1	11.7	598	94	47	1.000003
109500	7.7	-36.6	11.4	599	96	46	1.000003
110000	7.6	-36.2	11.1	599	99	45	1.000002
110500	7.4	-35.8	10.9	600	101	43	1.000002
111000	7.3	-35.4	10.6	600	103	42	1.000002
111500	7.1	-35.0	10.4	601	104	40	1.000002
112000	6.9	-34.6	10.1	601	105	38	1.000002
112500	6.8	-34.2	9.9	602	105	36	1.000002
113000	6.7	-33.8	9.7	602	107	35	1.000002
113500	6.5	-33.4	9.5	603	108	33	1.000002
114000	6.4	-33.0	9.2	603	109	32	1.000002
114500	6.2	-32.6	9.0	604	109	31	1.000002
115000	6.1	-32.2	8.8	604	108	32	1.000002
115500	6.0	-31.8	8.6	605	107	33	1.000002
116000	5.9	-31.4	8.4	605	105	34	1.000002
116500	5.7	-31.0	8.2	606			
117000	5.6	-30.6	8.1	606			
117500	5.5	-30.2	7.9	607			
118000	5.4	-29.8	7.7	607			
118500	5.3	-29.5	7.5	608			
119000	5.2	-29.1	7.4	608			
119500	5.0	-28.7	7.2	609			

APPENDIX C

TABLE C.V

STATION ALTITUDE	3989 FEET MSL	UPPER AIR DATA	WHITE SANDS SITE
DATE 28 JUN 1963	0730 HRS MST		
ASCENSION NO. 483			
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY GM/CUBIC METER PERCENT
3989	980.4	26.6 12.4	41 1017.1
5000	950.0	23.3 11.8	48 992.9
5500	935.3	22.5 11.3	49 978.5
6000	920.8	21.6 10.9	50 964.4
6500	906.6	20.8 10.1	50 950.5
7000	922.5	19.9 8.1	46 937.3
7500	778.6	19.1 5.9	42 924.2
8000	764.9	18.2 3.7	38 911.1
8500	751.4	17.3 1.4	34 898.2
9000	738.1	17.3 -0.2	30 882.7
9500	725.1	17.2 -1.9	27 867.6
10000	712.2	16.0 -2.4	28 855.9
10500	699.5	14.7 -3.0	29 844.3
11000	687.0	13.5 -3.5	30 832.9
11500	674.7	12.2 -4.0	32 821.6
12000	662.5	10.9 -4.3	34 810.6
12500	550.5	9.6 -4.7	36 799.7
13000	538.7	8.2 -5.2	38 788.9
13500	627.0	6.9 -5.7	40 778.2
14000	615.5	5.5 -6.3	42 767.7
14500	604.1	4.2 -6.9	44 757.2
15000	592.9	2.8 -7.6	46 746.9
15500	581.8	1.4 -8.2	49 736.7
16000	570.9	0.1 -9.0	51 726.6
16500	560.2	-1.3 -9.7	53 716.6
17000	549.6	-2.7 -10.6	55 706.7
17500	539.1	-4.1 -11.4	57 696.9
18000	528.3	-5.5 -12.3	59 687.2
18500	518.6	-6.9 -13.2	61 677.6
19000	508.6	-6.6 -21.4	30 664.1
19500	498.8	-6.5	651.4
20000	489.1	-7.1	640.5
20500	479.7	-7.8	629.8

WSTN. SITE COORDINATES	E 488, 580 FEET	INDEX OF	REFRACTION
	N. 185, 045 FEET		
WIND DATA			
DIRECTION DEGREES			
WIND SPEED KNOTS			
SPEED OF SOUND KNOTS			
RELATIVE DENSITY			
HUMIDITY GM/CUBIC			
METER			
PERCENT			

STATION ALTITUDE 3989 FEET MSL
DATE 28 JUN 1963, 0730 HRS MST
ASCENSION NO. 485

UPPER AIR DATA
WHITE SANDS SITE

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEMPPOINT DEGREES	RELATIVE HUMIDITY GM/CUBIC PERCENT	SOUND METER KNOTS	SPEED OF WIND DATA DIRECTION DEGREES (TN) KNOTS	INDEX OF REFRACTION
21000	470.4	-8.5	619.2	633	102	1.000138
21500	461.2	-9.7	610.0	632	105	1.000136
22000	452.2	-11.0	600.9	630	107	1.000134
22500	443.3	-12.2	592.0	629	111	1.000132
23000	434.5	-13.5	583.1	627	114	1.000130
23500	425.9	-14.8	574.4	626	122	1.000128
24000	417.4	-16.1	565.8	624	130	1.000126
24500	409.1	-17.4	557.2	623	133	1.000124
25000	400.8	-18.7	548.8	621	139	1.000122
25500	392.7	-20.0	540.5	620	217	1.000120
26000	384.7	-21.4	532.4	618	295	1.000119
26500	376.9	-22.7	524.3	616	307	1.000117
27000	369.1	-24.1	516.4	614	319	1.000115
27500	361.5	-25.5	508.5	613	327	1.000113
28000	354.0	-26.8	500.6	611	337	1.000111
28500	346.6	-27.8	492.1	610	3	1.000110
29000	339.3	-28.8	483.8	609	25	1.000108
29500	332.2	-29.8	475.7	607	18	1.000106
30000	325.1	-30.9	467.6	606	10	1.000104
30500	318.3	-30.9	457.7	606	359	1.000102
31000	311.5	-31.2	448.7	606	347	1.000100
31500	304.9	-31.9	440.3	605	343	1.000098
32000	298.4	-32.9	432.7	604	338	1.000096
32500	292.0	-34.0	425.4	602	338	1.000095
33000	285.7	-35.1	418.3	601	338	1.000093
33500	279.6	-36.3	411.2	599	339	1.000092
34000	273.5	-37.4	404.2	598	340	1.000090
34500	267.5	-38.5	397.3	596	343	1.000088
35000	261.7	-39.7	390.5	595	348	1.000087
35500	255.9	-40.8	383.8	593	349	1.000085
36000	250.2	-42.0	377.2	592	349	1.000084
36500	244.7	-43.2	370.7	591	350	1.000083
37000	239.2	-44.3	364.3	589	352	1.000081

APPENDIX C

TABLE C-V (Cont.)

STATION ALTITUDE 3989 FEET MSL
 DATE 28 JUN 1963, 0730 HRS MST
 ASCENSION NO. 485

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEWPNT CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND KNOTS	SPEED OF WIND KNOTS	WIND DATA		
							DIRECTION DEGREES (IN)	INDEX CF	REFRACTN
37500	233.8	-45.5	357.9	587	353	19	1.000030		
38000	228.6	-46.7	351.7	586	353	19	1.000078		
38500	223.4	-47.9	345.5	584	353	18	1.000077		
39000	218.3	-49.1	339.4	583	353	17	1.000076		
39500	213.3	-50.3	333.4	581	356	16	1.000074		
40000	208.3	-51.4	327.3	580	354	15	1.000073		
40500	203.5	-52.5	321.3	578	350	14	1.000072		
41000	198.8	-53.6	315.4	577	345	14	1.000070		
41500	194.1	-54.7	309.6	576	339	13	1.000069		
42000	189.6	-55.8	303.9	574	333	13	1.000068		
42500	185.1	-56.9	298.3	573	325	15	1.000066		
43000	180.7	-58.1	292.8	571	318	17	1.000065		
43500	176.4	-59.2	287.3	570	314	16	1.000064		
44000	172.2	-60.1	281.5	568	312	16	1.000063		
44500	168.0	-60.8	275.7	567	310	16	1.000061		
45000	164.0	-61.5	269.9	566	308	16	1.000060		
45500	160.0	-62.2	264.3	566	305	15	1.000059		
46000	156.1	-62.9	258.7	565	302	13	1.000058		
46500	152.3	-63.7	253.3	564	299	12	1.000056		
47000	148.6	-64.4	248.0	563	298	11	1.000055		
47500	144.9	-65.0	242.6	562	297	10	1.000054		
48000	141.4	-65.7	237.4	561	295	9	1.000053		
48500	137.9	-66.3	232.2	560	293	8	1.000052		
49000	134.5	-66.9	227.2	559	302	6	1.000051		
49500	131.1	-67.6	222.2	558	321	4	1.000049		
50000	127.9	-68.2	217.4	557	337	1	1.000048		
50500	124.7	-68.8	212.6	557	263	2	1.000047		
51000	121.5	-69.5	207.9	556	190	3	1.000046		
51500	118.5	-69.9	203.1	555	154	3	1.000045		
52000	115.5	-70.1	198.2	555	150	3	1.000044		
52500	112.6	-70.3	193.4	555	151	3	1.000043		
53000	109.8	-70.5	188.7	554	182	4	1.000042		
53500	107.0	-70.7	184.1	554	214	4	1.000041		

APPENDIX C

TABLE C- V (Cont.)

STATION ALTITUDE 3989 FEET MSL
 DATE 28 JUN 1963. 0730 HRS NST
 ASCENSION NO. 485

STATION ALTITUDE 3989 FEET MSL		WHITE SANDS SITE		UPPER AIR DATA		WSTM SITE COORDINATES	
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEPOINT CENTIGRADE	HUMIDITY PERCENT	RELATIVE DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA INDEX OF REFRACTION
54000	104.3	-70.5	179.3	554	257	4	1.000040
54500	101.7	-69.5	174.0	556	303	4	1.000039
55000	99.1	-68.9	169.1	556	344	5	1.000038
55500	96.6	-69.0	164.9	556	23	5	1.000037
56000	94.2	-69.1	160.9	556	37	8	1.000036
56500	91.9	-69.2	156.9	556	48	11	1.000035
57000	89.6	-68.6	152.5	557	54	12	1.000034
57500	87.3	-68.0	148.3	558	59	12	1.000033
58000	85.2	-67.4	144.2	559	63	13	1.000032
58500	83.0	-66.8	140.2	559	67	11	1.000031
59000	81.0	-66.2	136.3	560	70	10	1.000030
59500	79.0	-65.6	132.6	561	75	10	1.000030
60000	77.1	-65.0	129.0	562	82	11	1.000029
60500	75.2	-64.4	125.5	563	88	13	1.000028
61000	73.3	-63.8	122.1	563	91	15	1.000027
61500	71.5	-63.2	118.8	564	93	17	1.000026
62000	69.8	-62.7	115.5	565	94	19	1.000026
62500	68.1	-62.1	112.4	566	92	23	1.000025
63000	66.5	-61.5	109.4	566	90	26	1.000024
63500	64.9	-60.9	106.5	567	90	27	1.000024
64000	63.3	-60.4	103.7	568	90	27	1.000023
64500	61.8	-59.8	100.9	569	91	27	1.000022
65000	60.3	-59.2	98.2	570	91	26	1.000022
65500	58.9	-58.6	95.6	570	91	25	1.000021
66000	57.5	-58.1	93.1	571	91	23	1.000021
66500	56.1	-57.5	90.7	572	92	21	1.000020
67000	54.8	-56.9	88.2	573	92	20	1.000020
67500	53.5	-56.4	86.0	573	92	18	1.000019
68000	52.2	-55.8	83.7	574	92	17	1.000019
68500	51.0	-55.2	81.6	575	95	16	1.000018
69000	49.8	-54.7	79.4	576	99	15	1.000018
69500	48.7	-54.1	77.4	576	101	15	1.000017
70000	47.5	-53.6	75.4	577	101	15	1.000017

APPENDIX C

TABLE C-V (Cont.)

STATION ALTITUDE 3989 FEET MSL
 DATE 28 JUN 1963, 0730 HRS MST
 ASCENSION NO. 485

UPPER AIR DATA

WHITE SANDS SITE

WSTN SITE COORDINATES
 E 488, 580 FEET
 N 185, 045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEPOINT DEGREES	HUMIDITY CENTIGRADE PERCENT	RELATIVE DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TIN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
70500	46.4	-53.2			73.5	577	102	15	1.000016
71000	45.3	-53.1			71.8	578	100	16	1.000016
71500	44.3	-53.0			70.0	578	98	17	1.000016
72000	43.2	-52.8			68.4	578	96	18	1.000015
72500	42.2	-52.7			66.8	578	94	19	1.000015
73000	41.3	-52.6			65.2	578	93	20	1.000015
73500	40.3	-52.4			63.6	578	91	22	1.000014
74000	39.4	-52.3			62.1	579	91	22	1.000014
74500	38.5	-52.2			60.7	579	90	23	1.000014
75000	37.6	-52.1			59.2	579	90	24	1.000013
75500	36.7	-51.9			57.8	579	92	24	1.000013
76000	35.9	-51.8			56.4	579	95	23	1.000013
76500	35.0	-51.7			55.1	579	97	23	1.000012
77000	34.2	-51.5			53.8	580	97	23	1.000012
77500	33.4	-51.1			52.5	580	97	23	1.000012
78000	32.7	-50.5			51.1	581	97	23	1.000011
78500	31.9	-49.8			49.8	582	97	23	1.000011
79000	31.2	-49.2			48.5	583	97	23	1.000011
79500	30.5	-48.6			47.3	583	97	23	1.000011
80000	29.8	-48.0			46.1	584	96	22	1.000010
80500	29.1	-47.4			44.9	585	94	22	1.000010
81000	28.5	-46.8			43.8	586	92	22	1.000010
81500	27.8	-46.5			42.8	586	90	22	1.000010
82000	27.2	-46.7			41.8	586	89	22	1.000009
82500	26.6	-46.9			40.9	586	88	22	1.000009
83000	26.0	-47.1			40.0	585	87	23	1.000009
83500	25.4	-47.3			39.2	585	87	23	1.000009
84000	24.8	-47.6			38.3	585	87	24	1.000009
84500	24.3	-47.8			37.5	585	87	25	1.000008
85000	23.7	-48.0			36.7	584	87	25	1.000008
85500	23.2	-48.2			35.9	584	85	26	1.000008
86000	22.6	-48.4			35.1	584	83	26	1.000008
86500	22.1	-48.6			34.3	583	81		

APPENDIX C

TABLE C-V (Cont)

STATION ALTITUDE 3989FEET MSL		HSTM SITE COORDINATES	
DATE 28 JUN 1963, 0730 HRS HST		E 488.580 FEET	
ASCENSION NO. 485		N 185.045 FEET	
GEOMETRIC ALTITUDE HSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	RELATIVE DENSITY HUMIDITY GM/CUBIC PERCENT METER
87000	21.6	-48.4	33.5 584
87500	21.1	-47.9	32.7 584
88000	20.7	-47.5	31.9 585
88500	20.2	-47.1	31.1 585
89000	19.7	-46.6	30.4 586
89500	19.3	-46.2	29.6 587

APPENDIX D

IMPACT PREDICTION DATA

TABLE

PAGE

APPENDIX D

TABLE D-1
IMPACT PREDICTION DATA

MISSILE: AEROBEE NE 3,129

DATE: 28 JUNE 1963

RELEASE TIME (MST)		DISPLACEMENT OF IMPACT DUE TO WIND IN MILES				THEORETICAL IMPACT IN MILES	
RAWIN- SONDE	PIBAL	143 TO 2,000 FT	2,000 TO 10,000 FT	10,000 TO 100,000 FT	TOTAL	N-S OF LAUNCHER	E-W OF LAUNCHER
R ₁ 0030		39.5S	5.2S	3.8N	40.9S		
R 0030	P 0330	12.8E	6.5E	3.2E	22.5E		
R ₁ 0030		38.2S	5.2S	3.8N	39.6S		
R 0030	P 0400	37.0E	6.5E	3.2E	46.7E	13.5	28.6
R ₁ 0030		17.4S	5.2S	3.8N	18.8S		
R 0030	P 0435	30.7E	6.5E	3.2E	40.4E	34.3	22.3
R ₁ 0030		29.3S	5.2S	3.8N	30.7S		
R 0030	P 0500	27.4E	6.5E	3.2E	37.1E	22.4	19.0
R ₁ 0330		19.3S	5.4S	5.6N	19.1S		
R 0330	P 0525	0.7E	6.0E	2.7E	9.4E	34.0	8.7W
R 0330	P ₁ 0535	17.2S	6.1S	5.6N	17.7S		
	P 0600	4.6E	3.6E	2.7E	10.9E	35.4	7.2
R ₂ 0600		19.2S	4.7S	5.6N	18.3S		
R 0330	P 0625	16.6E	5.5E	2.7E	24.8E	34.8	6.7E
R 0330	P ₁ 0635	17.9S	4.6S	5.6N	16.9S		
	P 0645	23.7E	3.3E	2.7E	29.7E	36.2	11.6
R 0330	P ₁ 0635	20.4S	4.6S	5.6N	19.4S		
	P 0700	18.6E	3.3E	2.7E	24.6E	33.7	6.0
R 0330	P ₁ 0635	19.5S	4.6S	5.6N	18.5S		
	P 0710	15.9E	3.3E	2.7E	21.9E	34.6	3.8
R 0330	P ₁ 0635	18.6S	4.6S	5.6N	17.6S		
	P 0718	17.4E	3.3E	2.7E	23.4E	35.5	5.3
R 0330	P ₁ 0635	18.6S	4.6S	5.6N	17.6S		
	P 0725	17.0E	3.3E	2.7E	23.0E	35.5	4.9
*R ₁ 0730		21.2S	4.3S	5.3N	20.2S		
*R ₁ 0730	*P 0732	15.9E	6.1E	6.5E	28.5E	32.9	10.4

P = Double Theodolite Winds (143-2,000 Ft)

P₁ = Single Theodolite Winds (2,000-10,000 Ft)

R = Rawinsonde Winds (Above 10,000 Ft)

R₁ = Rawinsonde Winds (2,000-10,000 Ft)

R₂ = Rawin Winds (2,000-10,000 Ft)

* Post-Shoot Data

APPENDIX D

TABLE D-1 (Cont)
IMPACT PREDICTION DATA

AEROBEE NE 3.129

JACK SETTINGS

West leg 21 inches East leg 27 inches

LAUNCHER SETTING

Tilt 87.3 degrees Azimuth 347.80 degrees

COMPONENTS OF TILT

2.64 degrees north 0.57 degrees West

NO WIND IMPACT

53.1 miles north of Navy Blockhouse 18.1 miles West of Navy Blockhouse

PREDICTED IMPACT

40 miles north of Navy Blockhouse 0 miles E-W of Navy Blockhouse

PREDICTED BOOSTER IMPACT

Azimuth 005 Degrees Distance 1000 feet

Recommendation Fire

With 99 % confidence of impacting on range, based upon:

wind correction 24 miles

one hour wind variability 3 miles

Date/Time 28 June 1963, 0730 hours MST

* SOTIM Actual Impact (From Launcher) 33.6 Miles North 9.6 Miles East

Actual Booster Impact (From Launcher) N/A

* Sonic Observation of Trajectory and Impact of Missiles

U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

WILLIAM C. SKINNER
COLONEL, SIGNAL CORPS
COMMANDING

Approval. Data Report EPDA-80 has been reviewed and approved for publication:


DONALD G. BUCK

Captain, Signal Corps
Chief
Meteorological Support Division


CLARIFICE E. MORRISON
1st Colonel, Signal Corps
Director
Environmental Sciences Department

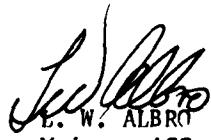
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HEADQUARTERS
U. S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT ACTIVITY
WHITE SANDS MISSILE RANGE
NEW MEXICO

October 1963

1. Data Report ERDA-80 has been prepared under the supervision of the Meteorological Support Division and is published for the information and guidance of all concerned.
2. Suggestions or criticisms relative to the form, contents, purpose, or use of this publication should be referred to the Commanding Officer, U. S. Army Electronics Research and Development Activity, ATTN: SELWS-M, White Sands Missile Range, New Mexico.

FOR THE COMMANDER:



L. W. ALBRO
Major, AGC
Adjutant

A-1 Army Electronics Research and Development Activity, Meteorological Support Division, White Sands Missile Range, New Mexico METEORLOGICAL DATA REPORT, AEROMEE NE 3.129, by Marjorie McLaurie Hoidal, Data Report, October 1963, 37 pp.	UNCLASSIFIED 1. Ballistics 2. Meteorology 3. Wind	A-1 Army Electronics Research and Development Activity, Meteorological Support Division, White Sands Missile Range, New Mexico METEORLOGICAL DATA REPORT, AEROMEE NE 3.129, by Marjorie McLaurie Hoidal, Data Report, October 1963, 37 pp.	UNCLASSIFIED <u>UNCLASSIFIED Report</u> Meteorological data gathered for the launching of Aerobee NE 3.129 are presented for the U. S. Naval Research Laboratory and for ballistic studies. The data appear, along with calculated ballistic data, in Appendices A, B, C and D.	UNCLASSIFIED <u>UNCLASSIFIED Report</u>	UNCLASSIFIED Meteorological data gathered for the launching of Aerobee NE 3.129 are presented for the U. S. Naval Research Laboratory and for ballistic studies. The data appear, along with calculated ballistic data, in Appendices A, B, C and D.
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